DOCUMENT RESUME

ED 343 299 EC 300 978

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TITLE Beyond Workbooks: The Computer as a Treatment Supplement.
PUB DATE Nov 91
NOTE 11p.; Paper presented at the Annual Convention of the American Speech-Language-Hearing Association (Atlanta, GA, November 22-25, 1991).
PUB TYPE Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adult Education; Adults; *Aphasia; Computer Assisted Instruction; *Computer Oriented Programs; Computer Software; *Drills (Practice); *Home Programs; *Independent Study; *Language Acquisition; Microcomputers; Program Development; Rehabilitation; Speech Skills; Stimulation

ABSTRACT

This presentation describes the use of a computer-based stimulation program to allow aphasic patients to practice their language skills independent of the clinician, specifically in the home setting. The prototype computer program, called the Computerized Language Activity Resource Kit, uses the vocabulary found in the Language Activity Resource Kit, which is a collection of objects, pictures, photographs, words, and phrases for use in therapy with aphasic adults. The program includes visual comprehension, reading comprehension, and auditory comprehension tasks. It features: use of the Macintosh computer which is transportable and easy to set up; automatic loading and ejection of the disk when starting and ending the program; clinician controls for customizing the exercise; sequential recording of response accuracy, response delays, item analyses, and time factors; and use of digitized speech output. Informal assessment of patient reactions to the program have been favorable. Advantages in use of this program include the possibility of concurrent treatment of patients, extending treatment to patients who cannot travel to the speech clinic, and providing a low-cost type of service delivery. (JDD)

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This presentation emphasizes the possibilities of using a computer based stimulation program to allow aphasic patients to practice independent of the clinician, specifically in the home setting. A prototype computer program written in Hypercard language for the Macintosh computer is demonstrated. The program has unique features which allows the patient to operate and set-up of the computer and software in the home setting. These unique features include:

* Use of the Macintosh computer which is transportable and easy to set up

* Automatic loading and ejection of the disk during starting and ending the program

* Clinicians controls for customizing the exercise

* Sequential recording to disk of the date, beginning and ending times, response accuracy, response delays, and individual item analysis during each practice session

* Use of digitized speech for "natural" sound output

This type of computer program offers several advantages to clinical delivery including the possiblity of concurrent treatment of patients, extending treatment for patients who cannot travel to the speech clinic, and providing a low-cost type of service delivery. The present "state of the art" of computer-assisted therapy remains confined to the clinic setting. With the use of "user-friendly" computers and programs the patient's ability to practice independent of the therapist and extend the duration of the treatment is possible. The computer offers a dynamic, motivating media to provide practice allow for the recording of patient progress and document use for third-party payors.

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INTRODUCTION

Aphasia therapy often involves the use of clincian designed tasks, audio recordings, or workbook assignments to be completed by the patient as "home work". These exercises are limited to those that involve paper-and-pencil or common household devices, such as the tape recorder or video cassette recorder. Telephone contact has been used as an alternative to face-to-face treatment sessions. (Helm-Estabrooks and Ramsberger, 1986). A project by the V.A. Hospital in Birmingham, Alabama (Vaughn, 1980) used a mainframe computer system and telephone to conduct routine therapy sessions with patients unable to travel to out-patient therapy. The 1980's ushered in the widespread use of computers in aphasia therapy, however their use continues to be restricted to the in-patient clinic.

The microcomputer has a useful role in treating the aphasic patient (Katz, 1984). It can allow the patient to practice exercises independent of the therapist and objectively measure the patient's performance. Recent research has compared the computer-aided approach to the clinician directed therapy in the treatment of aphasia (Loverso, Prescott, Selinger, and Riley, 1989). The results found that, although the patients achieved criteria faster with the clinician-directed therapy, the

computer, nonetheless, could help the patient in reaching the same criteria. The computer offers an alternative to traditional face-to-face therapy sessions.

Presently there are only a few systems designed to be used outside of the clinic. The present (and recent past) software involved too complex operations for the severe-to-moderate aphasic patient. The programs require selecting parameters from a sequence of screens and the ability to utilize the keyboard for "booting" (starting) the program and selecting the program choices. With advancement in both computer and software design it becomes possible to develop a program which provides stimulation activities for the severe-to-moderate aphasic patient and can be operated without extensive computer backround or training.

SOFTWARE DESIGN

The Computerized Language Activity Resource Kit (CLARK) is a computer-assisted drill and practice program for the severely to moderately aphasic adult. It was programmed for an Apple Macintosh computer (Plus, SE, Classic, SE-30, LC, etc.) with Hypercard language. The program uses the vocabulary found in the Language Activity Resource Kit (LARK), published by Communication Skill Builders in Tucson,AZ (Dressler, 1986). The LARK is a collection of objects, pictures, photographs, words, and phrases designed to provide the speech-language pathologist with a resource of material to use in therapy with aphasic adults.

The CLARK program allows the therapist to provide an extension of stimulation activities for the patient using the same, familiar concepts (pictures, words, phrases) as used in face-to-face therapy sessions. Using the Macintosh computer the patient can operate the computer and program independent of the therapist. Due to the inherent 'user friendliness" of the Macintosh the patient can use the mouse input device or a touch-screen to respond to the program. The patient's responses are recorded and stored for later review by the therapist. Since the Macintosh is transportable the patient could use the program

at home, nursing facility, or independent lab setting.

The CLARK program includes visual comprehension (matching pictures, words, and phrases), reading comprehension (word, and phrases), and auditory comprehension tasks (word, and phrases). The program uses digitized sound for "natural" speech and can operate from a floppy disk so that the patient could practice several types of exercises stored on separate disks. Each time the patient practices an exercise the program records the date, time, accuracy, response time, and score for each vocabulary item. The therapist can "unlock" the program and view the patient's progress at any time (daily, weekly, monthly). When the patient "boots" the disk the CLARK program will start the exercise. Therefore the patient will not have to know how to "open" the program file or be able to see the data summary.

PATIENT RESPONSE AND CLINICAL IMPACT

Informal assessment of patient reactions to the program have been favorable, as even the severely involved patients have been able to operate the program and understand the tasks. Several attempts to have patients use the computer and software in the patient's home have been unsuccessful due to failure of the software and an inability to record consecutive sessions. However the patients who had an opportunity to use the program outside the clinic setting for a short time expressed interest and enthusiasm in being able to practice independent of the therapist.

The use of computers for "take-home" practice has the potential for maximizing therapeutic intervention, by allowing the patient to practice exercises outside the clinic at an unlimited time and duration. It can help reduce costs, by lessening the transportation need and costs of face-to-face therapy. In the clinic setting, the computer can be used to have patients work independent of the therapist allowing for concurrent therapy with two or more patients.

Petheram (1991) used a computer to supplement the treatment of 10 patients in the home setting. None of the patients had prior computer experience. The software used in the study was similar to the

stimulation exercises used in the CLARK program. The patients' success in using the program was limited to measured success on the computer program tasks but was not generalized to formal test measurements. The author reports that the subjects used the computer system for the full 6-week trial period and found the computer to be motivating and helped reduce boredom.

CONCLUSION

The CLARK program is a proto-type (beta-version) of a computer-assisted stimulation activity for the severely to moderately aphasic adult. It utilizes the Apple Macintosh computer due to its "user friendly" operation and ease of set-up for the novice computer-user patient and/or family.

Unique features of the CLARK program include:

* Automatic loading and ejection of the disk during starting and stopping of the exercise program, respectively.

* Clinician controls for program customization of the exercise.

* Sequential recording of the date, start and end times, overall patient accuracy, and individual item scoring.

* Complete patient independence for computer and program operation

* Use of digitized sound for "natural" sound output.

* The Macintosh and CLARK program can be set-up and operated outside the clinical setting (i.e. home, SNF, etc.)

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